



**PATENT**

**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE**

Application No.: 10/657,005

Filing Date: September 5, 2003

Applicant: Ronald N. Caron

Group Art: 1742

Examiner: Sikyin Ip

Title: Age-Hardening Copper-Base Alloy And Processing

Attorney Docket: 6113B-000026/US

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Mail Stop Appeal Brief - Patents  
Commissioner for Patents  
P.O. Box 1450  
Alexandria, VA 22313-1450

**APPEAL BRIEF**  
**UNDER 37 C.F.R. § 41.37**

Sir:

The Notice of Appeal in this Application was mailed on May 21, 2007. This brief is submitted with the fee required under 37 C.F.R. §1.17(f).

05/25/2007 MRLAWCO 00000004 10657005

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Serial No.:10/657,005

Page 1 of 21

EV 844119751 US

**FEE TRANSMITTAL  
for FY 2007**

Effective 2/8/2006. Patent fees are subject to annual revision.

☐ Applicant claims small entity status. See 37 CFR 1.27**TOTAL AMOUNT OF PAYMENT** (\$) 500**Complete if Known**

Application Number	10/657,005
Filing Date	September 5, 2003
First Named Inventor	Ronald N. Caron
Examiner Name	Sikyin Ip
Art Unit	1742
Attorney Docket No.	6113B-000026/US

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to the above-identified deposit account.**FEE CALCULATION****1. BASIC FILING FEE**

Large Entity		Small Entity		Fee Description	Fee Paid
Fee Code	Fee (\$)	Fee Code	Fee (\$)		
1011	300	2011	150	Utility filing fee	
1012	200	2012	100	Design filing fee	
1013	200	2013	100	Plant filing fee	
1014	300	2014	150	Reissue filing fee	
1005	200	2005	100	Provisional filing fee	
SUBTOTAL (1)					(\$) 0

**2. EXTRA CLAIM FEES FOR UTILITY AND REISSUE**

Total Claims		-20 **	=	0	X	Fee from below	=	0
Independent Claims		-3 **	=	0	X		=	0
Multiple Dependent			=				=	0

Large Entity		Small Entity		Fee Description
Fee Code	Fee (\$)	Fee Code	Fee (\$)	
1202	50	2202	25	Claims in excess of 20
1201	200	2201	100	Independent claims in excess of 3
1203	360	2203	180	Multiple dependent claim, if not paid
1204	200	2204	100	** Reissue independent claims over original patent
1205	50	2205	25	** Reissue claims in excess of 20 and over original patent

SUBTOTAL (2) (\$) 0

\*\*or number previously paid, if greater; For Reissues, see above

**FEE CALCULATION (continued)****3. ADDITIONAL FEES**

Large Entity		Small Entity		Fee Description	Fee Paid
Fee Code	Fee (\$)	Fee Code	Fee (\$)		
1051	130	2051	65	Surcharge - late filing fee or oath	
1052	50	2052	25	Surcharge - late provisional filing fee or cover sheet.	
1053	130	1053	130	Non-English specification	
1812	2,520	1812	2,520	For filing a request for reexamination	
1804	920*	1804	920*	Requesting publication of SIR prior to Examiner action	
1805	1,840*	1805	1,840*	Requesting publication of SIR after Examiner action	
1251	120	2251	60	Extension for reply within first month	
1252	450	2252	225	Extension for reply within second month	
1253	1020	2253	510	Extension for reply within third month	
1254	1,590	2254	795	Extension for reply within fourth month	
1255	2,160	2255	1080	Extension for reply within fifth month	
1401	500	2401	250	Notice of Appeal	500
1402	500	2402	250	Filing a brief in support of an appeal	
1403	1000	2403	500	Request for oral hearing	
1452	500	2452	250	Petition to revive - unavoidable	
1453	1500	2453	750	Petition to revive - unintentional	
1462	400	1462	400	Petition fee under 37 CFR 1.17(f)	
1463	200	1463	200	Petition fee under 37 CFR 1.17(g)	
1464	130	1464	130	Petition fee under 37 CFR 1.17(h)	
1807	50	1807	50	Processing fee under 37 CFR 1.17 (q)	
1806	180	1806	180	Submission of Information Disclosure Stmt	
8021	40	8021	40	Recording each patent assignment per property (times number of properties)	
1809	790	2809	395	Filing a submission after final rejection (37 CFR § 1.129(a))	
1810	790	2810	395	For each additional invention to be examined (37 CFR § 1.129(b))	
1801	790	2801	395	Request for Continued Examination (RCE)	

Other fee (specify) \_\_\_\_\_

\*Reduced by Basic Filing Fee Paid SUBTOTAL (3) (\$500)

**4. SEARCH/EXAMINATION FEES**

1111	500	2111	250	Utility Search Fee	
1112	100	2112	50	Design Search Fee	
1113	300	2113	150	Plant Search Fee	
1114	500	2114	250	Reissue Search Fee	
1311	200	2311	100	Utility Examination Fee	
1312	130	2312	65	Design Examination Fee	
1313	160	2313	80	Plant Examination Fee	
1314	600	2314	300	Reissue Examination Fee	

SUBTOTAL (4) (\$) 0

**SUBMITTED BY****Complete (if applicable)**

Name (Print/Type)	Kevin Pumm	Registration No. (Attorney/Agent)	49,046	Telephone	314-726-7500
Signature	Kevin Pumm	Date	May 23, 2007		

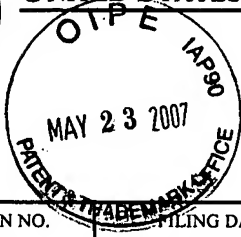
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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/657,005

09/05/2003

Ronald N. Caron

~~6113~~-000026/US

1736

28997 7590 02/23/2007  
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DOCKETED

FEB 23 2007

EXAMINER

IP, SIKYIN

ART UNIT

PAPER NUMBER

1742

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	02/23/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.



05-24-07

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PTO/SB/21 (04-07)

Approved for use through 09/30/2007. OMB 0651-0031

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<b>TRANSMITTAL FORM</b>  <i>(to be used for all correspondence after initial filing)</i>	Application Number	10/657,005	
	Filing Date	September 5, 2003	
	First Named Inventor	Ronald N. Caron	
	Art Unit	1742	
	Examiner Name	Sikyin Ip	
Total Number of Pages in This Submission	30	Attorney Docket Number	6113B-000026/US

ENCLOSURES (check all that apply)		
<input checked="" type="checkbox"/> Fee Transmittal Form  <input checked="" type="checkbox"/> Fee Attached  <input type="checkbox"/> Amendment / Reply  <input type="checkbox"/> After Final  <input type="checkbox"/> Affidavits/declaration(s)  <input type="checkbox"/> Extension of Time Request  <input type="checkbox"/> Express Abandonment Request  <input type="checkbox"/> Information Disclosure Statement  <input type="checkbox"/> Certified Copy of Priority Document(s)  <input type="checkbox"/> Response to Missing Parts/ Incomplete Application  <input type="checkbox"/> Response to Missing Parts under 37 CFR 1.52 or 1.53	<input type="checkbox"/> Drawing(s)  <input type="checkbox"/> Licensing-related Papers  <input type="checkbox"/> Petition  <input type="checkbox"/> Petition to Convert to a Provisional Application  <input type="checkbox"/> Power of Attorney, Revocation Change of Correspondence Address  <input type="checkbox"/> Terminal Disclaimer  <input type="checkbox"/> Request for Refund  <input type="checkbox"/> CD, Number of CD(s) _____	<input type="checkbox"/> After Allowance Communication to Technology Center (TC)  <input type="checkbox"/> Appeal Communication to Board of Appeals and Interferences  <input checked="" type="checkbox"/> Appeal Communication to TC (Appeal Notice, Brief, Reply Brief)  <input type="checkbox"/> Proprietary Information  <input type="checkbox"/> Status Letter  <input checked="" type="checkbox"/> Other Enclosure(s) (please identify below):  <b>Copy of Final Office Action Check for \$500</b>
Remarks		The Commissioner is hereby authorized to charge any additional fees that may be required under 37 CFR 1.16 or 1.17 to Deposit Account No. 08-0750. A duplicate copy of this sheet is enclosed.

SIGNATURE OF APPLICANT, ATTORNEY, OR AGENT			
Firm Name	Harness, Dickey & Pierce, P.L.C.		
Signature			
Printed name	Kevin Pumm		
Date	May 23, 2007	Reg. No.	49,046

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Typed or printed name	Kevin Pumm	Express Mail Label No.	EV 84419751 US
Signature		Date	May 23, 2007

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## **APPELLANT'S BRIEF ON APPEAL**

Pursuant to 37 C.F.R. §41.37, Applicants submit their Brief on Appeal, as follows:

### ***REAL PARTY IN INTEREST – UNDER 37 C.F.R. § 41.37(c)(1)(i)***

The real party in interest in this appeal are The Olin Corporation, a corporation of the State of Virginia, having its principal place of business at 190 Carondelet Plaza Suite 1530 Clayton, MO 63105-3443, and Wieland-Werke AG, Graf-Acro-Strasse, having a principle address at Ulm, Germany D-89079, by virtue of an assignment recorded May 3, 2004 at Reel 015281, Frame 0426.

### ***RELATED APPEALS & INTERFERENCES - UNDER 37 C.F.R. § 41.37(c)(1)(ii)***

To the best of Appellants' knowledge, no other appeals or interferences are pending which will directly affect, be directly affected by or have a bearing on the Board's decision in the present pending appeal.

### ***STATUS OF THE CLAIMS – UNDER 37 C.F.R. § 41.37(c)(1)(iii)***

On May 21, 2007, Appellants appealed from a final rejection of claims 1-7.

- A copy of the claims presently being appealed (i.e., Claims 1-7 and withdrawn claims 8-19) is provided in the attached Claims Appendix.
- A copy of the Final Office Action mailed February 23, 2007 placing the claims under final rejection is provided in the attached Evidence appendix.

### ***STATUS OF AMENDMENTS – UNDER 37 C.F.R. § 41.37(c)(1)(iv)***

A final rejection was mailed February 23, 2007, and no amendments have been submitted in response thereto.

***SUMMARY OF THE CLAIMED SUBJECT MATTER – UNDER 37 C.F.R. § 41.37(c)(1)(v)***

**Claim 1**

With regard to independent claim 1, paragraph [0026] of the present application as published in 20040166017 states that “alloys consisting essentially of, by weight, from 0.35% to 5% titanium, from 0.001% to 10% of X, where X is selected from Ni, Fe, Sn, P, Al, Zn, Si, Pb, Be, Mn, Mg, Bi, S, Te, Se, Ag, As, Sb, Zr, B, Cr and Co and combinations thereof and the balance is copper and inevitable impurities. The alloy has an electrical conductivity of at least 50% IACS and a yield strength of at least 105 ksi. Table 1 of the application shows that the base Cu-Ni-Ti alloy J347 has a content of 0.80% Nickel and 0.80% Titanium. The base Cu-Ni-Ti alloy J347 achieved a yield strength of 106 ksi, as shown in Table 2. The base Cu-Ni-Ti alloy J347 possessed a yield strength of at least 105 ksi, and an electrical conductivity of 49.9% of the electrical conductivity of unalloyed copper (IACS), when cold-rolled and age annealed at 525° Celsius for three hours, and subsequently cold-rolled and age annealed at 525° Celsius for another three hours. (See Alloy ID J347 in Table 3 of the present application).

**Claim 5**

With regard to independent claim 5, paragraph [0027] of the present application as published in 20040166017 states that in a preferred aspect of the invention, the alloy consists essentially of from 0.35% to 2.5% titanium, from 0.5% to 5.0% nickel, from 0.5% to 0.8% of iron, cobalt and mixtures thereof, from 0.01% to 1.0% magnesium, up to 1% of Cr, Zr, Ag and combinations thereof and the balance is copper and inevitable impurities.

**GROUND FOR REJECTION TO BE REVIEWED ON APPEAL – UNDER 37 C.F.R. § 41.37(c)(1)(vi)**

Appellants present the following issue for review:

1. Is the invention set forth in claims 1-7 non-obvious under 35 U.S.C. §103(a) in view of JP 2001181759?
2. Is the invention set forth in claims 5-7 non-obvious under 35 U.S.C. §103(a) in view of JP 09263864 or JP 2002038246?

**ARGUMENT – UNDER 37 C.F.R. § 41.37(c)(1)(vii)**

**1. 1<sup>st</sup> GROUND OF REJECTION ON APPEAL**

Pursuant to 37 C.F.R. § 41.37(c)(1)(vii), the following provides the contentions of appellants with respect to the sole ground of rejection above presented for review in accordance with 37 C.F.R. § 41.37(c)(1)(vi).

**Claim 1**

The Office Action states that obviousness typically exists when the ranges of a claimed composition overlap the ranges disclosed within the prior art. However, An Appellant can rebut a *prima facie* case of obviousness based on overlapping ranges by showing the criticality of the claimed range, generally by showing that the claimed range achieves unexpected results relative to the prior art range.” *In re Woodruff*, 919 F.2d 1575, 16 USPQ2d 1934 (Fed. Cir. 1990); MPEP 2144.05. Here, claim 1 recites a Copper-Titanium alloy having a content of Titanium in the range of .35 to 5.0%, which the Appellant believes is required to achieve the unexpected results of a conductivity of 50% IACS and a yield strength of 105 KSI (see Alloy J347 in Tables 1-3, for example).

JP 2001181759 discloses only one specific Copper-Titanium alloy, that of Example 7. Contrary to claim 1, Example 7 has a 0.1% Titanium content below Appellant's claimed range, and a stated yield strength of 678 N/mm<sup>2</sup> / 98.3 KSI that is well below the Appellant's unexpected result of 105 KSI. The Appellant submits that the alloy in claim 1 having a Titanium content in the range of .35 to 5.0 percent results in a yield strength of 105 KSI while also providing a conductivity of at least 50% IACS (which conductivity is better than 19 of the 24 alloy examples recited in JP 2001181759). The Appellant submits that such characteristics are an unexpected result, which is further supported by the lower yield strength and lower conductivity values disclosed in JP 2001181759.

The Federal Circuit has also held that where the claimed and prior art products are alleged to have identical compositions, the prima facie case can be rebutted by evidence showing that the prior art products do not necessarily possess the characteristics of the claimed product. *MPEP 2112; In re Best*, 195 USPQ at 433 (Fed. Cir. 1990). Here, JP 2001181759 does not necessarily possess the characteristics of an alloy having a yield strength greater than 105 KSI, because while JP 2001181759 indicates that Titanium can be included, it does not disclose the critical range of .35 to 5.0 percent that the Appellant's found to be required to achieve the unexpected result of a yield strength of at least 105 KSI and a conductivity of at least 50% IACS. Absent the disclosure of such a range, the alloys in JP 2001181759 do not necessarily possess the characteristics of the 105 KSI yield strength.



The Federal Circuit has also held that a prior art reference that discloses a genus does not render unpatentable all species within that broad category, but must be examined to see if a disclosure of the claimed species has been made or whether the prior art reference merely invites further experimentation to find the species. *MPEP 2112(IV)*; *Metabolite Labs, Inc. v. Lab. Corp. of Am. Holdings*, 71 USPQ2d 1081, 1091 (Fed. Cir. 2004). Here, JP 2001181759 merely indicates that Titanium can be included, and accordingly discloses the broad genus of Copper alloys having an undisclosed amount of Titanium, which merely invites further experimentation to find a species with Appellant's claimed range of Titanium that will result in a yield strength of 105 KSI and a conductivity of at least 50% IACS. Thus, the Appellant submits that JP 2001181759 does not render obvious the Appellant's Copper alloy of claim 1 having a Titanium content in the range of .35 to 5.0%, which Appellant believes is required to achieve the unexpected results of a conductivity of 50% IACS and yield strength of 105 KSI.

#### **Claim 5**

JP 2001181759 discloses only one specific Copper-Titanium alloy, that of Example 7. Contrary to claim 5, Example 7 has a 0.1% Titanium content below Appellant's claimed range, and a stated yield strength of 678 N/mm<sup>2</sup> / 98.3 KSI that is well below the Appellant's claimed improved combination of yield strength and electrical conductivity. Moreover, JP 2001181759 also fails to disclose or suggest a Copper alloy having the claimed range of Titanium of .35 to 2.5%, and the claimed range of Nickel of 0.5 to 5.0 %, which the Appellant believes to be

required to achieve the unexpected improved combination of yield strength and electrical conductivity. (see Alloy J347 in Tables 1-3, for example).

Here, JP 2001181759 merely indicates that Titanium can be included, and accordingly discloses the broad genus of Copper alloys having an undisclosed amount of Titanium, which merely invites further experimentation to find a species with Appellant's claimed ranges for an alloy with an improved combination of yield strength and electrical conductivity. Thus, the Appellant also submits that JP 2001181759 does not render obvious the Appellant's alloy of claim 5 having a content of Titanium in the range of .35 to 2.5%, and a content of Nickel in the range of 0.5 to 5.0 %.

#### **Claims 2-4 and 6-7**

With regard to the subject matter of claims 2-4 and 6-7, these claims ultimately depend from independent claims 1 or 5, which the Appellant believes to be non-obvious and allowable for the reasons advanced above. As such, the Appellant submits that claims 2-4 and 6-7 are also allowable by virtue of their dependence from claims 1 and 5.

## **2. 2<sup>nd</sup> GROUND OF REJECTION ON APPEAL**

Pursuant to 37 C.F.R. § 41.37(c)(1)(vii), the following provides the contentions of appellants with respect to the sole ground of rejection above presented for review in accordance with 37 C.F.R. § 41.37(c)(1)(vi).

### **Claim 5**

The Office Action states that the Copper based alloy compositions disclosed in JP 09263864 And JP2002038246 overlap the Copper Alloy composition in claim 5, thereby establishing a Prima facie case of obviousness. However, an Appellant can rebut a *prima facie* case of obviousness based on overlapping ranges by showing the criticality of the claimed range, generally by showing that the claimed range achieves unexpected results relative to the prior art range." *In re Woodruff*, 919 F.2d 1575, 16 USPQ2d 1934 (Fed. Cir. 1990); MPEP 2144.05. Here, Appellant believes that the claimed ranges of .35- 2.5% Titanium and 0.5-5.0% Nickel are required to achieve an improved combination of yield strength and electrical conductivity that Appellant submits is unexpected.

Specifically, the Applicant points to the base Cu-Ni-Ti alloy J347 disclosed in Table 1 of the present application, which has a content of 0.80% Nickel and 0.80% Titanium. The base Cu-Ni-Ti alloy J347 achieved a yield strength of 106 ksi as shown in Table 2. Furthermore, the Applicants have found that the base Cu-Ni-Ti alloy J347 possessed a yield strength of at least 105 ksi, and an electrical conductivity of 49.9% of the electrical conductivity of unalloyed copper (IACS), when cold-rolled and age annealed at 525° Celsius for three hours, and subsequently cold-rolled and age annealed at 525° Celsius for another three hours. (See Alloy ID J347 in Table 3 of the present application as published in 20040166017). The Appellant believes that the claimed Titanium content of .35 to 2.5% and Nickel content of 0.5 to 5.0% are required to achieve an alloy having an improved combination of yield strength and electrical conductivity.

The Federal Circuit has also held that where the claimed and prior art products are alleged to have identical compositions, the prima facie case can be rebutted by evidence showing that the prior art products do not necessarily possess the characteristics of the claimed product. *MPEP 2112; In re Best*, 195 USPQ at 433 (Fed. Cir. 1990). Here, the alloy compositions disclosed in both JP 092363864 and JP 2002038246 do not necessarily possess the characteristics of an alloy having an improved combination of yield strength and electrical conductivity, such as a yield strength greater than 105 KSI or a conductivity of at least 50% IACS. While both JP 092363864 and JP 2002038246 indicate that Titanium or Nickel can be included, they do not disclose or suggest a specific range of Titanium or Nickel that would result in the Appellant's unexpected result of an alloy having an improved combination of yield strength and electrical conductivity (such as a yield strength of 105 KSI and a conductivity of at least 50% IACS). Absent such a specific range, the alloys in JP 092363864 and JP 2002038246 do not necessarily possess the characteristics of the 105 KSI yield strength.

Moreover, JP 2002038246 merely recites a Copper alloy in which a remainder consists of Copper and an unescapable impurity including: Sn: 0-10%wt, Zn: 0-40wt%, Nickel: 0-10 wt%, Fe: 0-3 wt%, Cr: 0-1 wt%, Mn: 0-1 wt%, P: 0-0.5 wt%, Si: 0-1 wt%, Mg: 0-1 wt%, Zn: 0-0.5 wt%, Ti: 0-1 wt% Co: 0-1 wt%, Ag:0-1 wt%, Aluminum 0-5 wt%. This laundry list of possible impurities is so broad it encompasses a very large number of possible combinations, which only invites further experimentation to find a species with the Appellant's claimed

range of Titanium and Nickel that will result in the unexpected result of an alloy having the claimed an improved combination of yield strength and electrical conductivity.

Likewise, JP 092363864 recites (in claim 2) a copper alloy that contains 0.1-1.0 wt % Si, and a total amount of 0.01 to 6.0 wt. % of at least one or more of the following: Mg: 0.01-1.0%wt, Al: 0.01-1.0wt%, Ti: 0.01-1.0wt%, Cr: 0.01-1.5wt%, Mn: 0.01-1.0wt%, Fe: 0.01-3.0wt%, Co: 0.01-3.0wt%, Ni: 0.01-4.0wt%, Zn: 0.01-5.0wt%, Zr: 0.01-1.0wt%, Ag: 0.01-1.0wt%, and Sn: 0.01-2.0wt%. Accordingly, JP 092363864 also discloses a large number of possible combinations, without any mention whatsoever of a Titanium or Nickel content required to achieve an improved combination of yield strength and electrical conductivity, such as a yield strength of at least 105 KSI, and an electrical conductivity of 49.9% of IACS achieved in Alloy J347. Thus, the Appellant submits that JP 092363864 and JP 2002038246 do not render obvious the Appellant's Copper alloy of claim 5 having a Titanium content in the range of .35 to 2.5 % and a Nickel content in the range of 0.5 to 5.0 %, which the Appellant believes is required to achieve the unexpected result of an alloy having an improved combination of yield strength and electrical conductivity (such as a yield strength of 105 KSI and a conductivity of at least 50% IACS).

Appellants also respectfully submit that the references *fail to provide any apparent reason* for combining the known elements of JP 2001181759 that would result in the fashion claimed in the present patent application. The Supreme Court has stated that there must be an apparent reason to combine the known

elements in the references in a manner that would result in the fashion claimed by the patent application at issue. *KSR International Co. v. Teleflex Inc.*, No. 04-1350, slip op. at 14 (U.S. Apr. 30, 2007). The Appellant submits that neither JP 092363864 nor JP 2002038246 make any mention whatsoever of a Titanium or Nickel content required to achieve the unexpected result of an alloy having an improved combination of yield strength and electrical conductivity (such as a yield strength of 105 KSI and a conductivity of at least 50% IACS). As such, the Appellant submits that claim 5 is not obvious in view of JP 092363864 or JP 2002038246.

**Claims 2-4 and 6-7**

With regard to the subject matter of claims 6-7, these claims ultimately depend from independent claim 5, which the Appellant believes to be non-obvious and allowable for the reasons advanced above. As such, the Appellant submits that claims 6-7 are also allowable by virtue of their dependence from claim 5.

## **CONCLUSION**

Appellant respectfully submits that the Examiner has not shown that claims 1-7 are obvious over JP 2001181759, or that claims 5-7 are obvious over JP 092363864 or JP 2002038246. Accordingly, reversal of the rejections of Claims 1-7 is respectfully requested.

Respectfully submitted,



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Date: MAY 23 2007

**CLAIMS APPENDIX**  
**UNDER 37 C.F.R. § 41.37(c)(1)(viii)**

1.     **(Original)**     A copper base alloy consisting essentially of, by weight:  
  
from 0.35% to 5% titanium;  
  
from 0.001% to 10% of X, where X is selected from Ni, Fe, Sn, P, Al, Zn, Si, Pb, Be, Mn, Mg, Bi, S, Te, Se, Ag, As, Sb, Zr, B, Cr and Co and combinations thereof; and  
  
the balance copper and inevitable impurities, said alloy having an electrical conductivity of at least 50% IACS and a yield strength of at least 105 ksi.
2.     **(Original)**     The copper base alloy of claim 1 wherein X is selected from the group consisting of Ni, Fe, Co, Mg, Cr, Zr, Ag and combinations thereof.
3.     **(Original)**     The copper base alloy of claim 2 further consisting essentially of:  
  
from 0.35% to 2.5% titanium;  
  
from 0.5% to 5.0% nickel;  
  
from 0.5% to 0.8% of iron, cobalt and mixtures thereof;  
  
from 0.01% to 1.0% magnesium; up to 1% of Cr, Zr, Ag and combinations thereof; and  
  
the balance copper and inevitable impurities.



4. **(Original)** The copper base alloy of claim 3 further consisting essentially of:  
from 0.8% to 1.4% titanium;  
from 0.8% to 1.7% nickel;  
from 0.9% to 1.1% of iron, cobalt and mixtures thereof;  
from 0.1% to 0.4% magnesium; up to 1% of Cr, Zr, Ag and combinations thereof;  
and  
the balance copper and inevitable impurities.
5. **(Original)** A copper base alloy having an improved combination of yield strength, electrical conductivity, stress relaxation resistance consisting essentially of by weight of:  
0.35-2.5% titanium;  
0.5-5.0% nickel;  
0.5-1.5% iron, cobalt and mixtures thereof;  
0.01-1.0% magnesium; up to 1% of Sn, Cr, Zr, Ag, Sn, P, Al, Zn, Si, Pb, Bi, S, Te, Se, Be, Mn, As, Sb, Zr, B and mixtures thereof; and  
the balance copper and inevitable impurities.
6. **(Original)** The copper base alloy of claim 5 containing up to 1% of Cr, Zr, Ag and mixtures thereof.

7. **(Original)** The copper base alloy of claim 6 consisting essentially of
- 0.8-1.4% titanium;
  - 0.8-1.7% nickel;
  - 0.90-1.10% iron, or cobalt;
  - 0.10-0.40% magnesium;
  - 0.01% to 1.0% of Cr, Zr, Ag and mixtures thereof; and
  - the balance copper and inevitable impurities
8. **(Withdrawn)** A process for making a copper base alloy having an improved combination of yield strength, electrical conductivity and stress relaxation, comprising:
- casting a copper base alloy that consists essentially, by weight, from 0.35% to 10% titanium, from 0.001% to 6% of X, where X is selected from Ni, Fe, Sn, P, Al, Zn, Si, Pb, Be, Mn, Mg, Bi, S, Te, Se, Ag, As, Sb, Zr, B, Cr and Co and combinations thereof and the balance copper and inevitable impurities;
  - hot rolling the alloy at from about 750°C. to about 1,000°C.;
  - first cold rolling the alloy to a reduction in area of from about 50% to about 97%;
  - first annealing the alloy at a temperature of from about 850°C to about 1,000° C for from about 10 seconds to about one hour, followed by a rapid cool to ambient;
  - second cold rolling the alloy up to about 80% reduction in area;
  - second annealing the alloy at from about 400°C to about 650°C for from about 1 minute to about 10 hours;
  - third cold rolling the alloy from about a 10% to about a 50% reduction in area to finished gauge.
9. **(Withdrawn)** The process of claim 8 wherein following said third cold rolling step, said alloy is annealed at a temperature of from about 150°C to about 600°C for

from about 15 seconds to about 10 hours.

10. **(Withdrawn)** The process of claim 9 wherein said first, second and third annealing steps have times and temperatures effective for said alloy to have a yield strength of at least 105 ksi and an electrical conductivity of at least 50% IACS at finish gauge.
11. **(Withdrawn)** A process for making a copper base alloy having an improved combination of yield strength, electrical conductivity, stress relaxation resistance, along with modest levels of bendability comprising:
- casting a copper base alloy that consists essentially, by weight, from 0.35% to 10% titanium, from 0.001% to 6% of X, where X is selected from Ni, Fe, Sn, P, Al, Zn, Si, Pb, Be, Mn, Mg, Bi, S, Te, Se, Ag, As, Sb, Zr, B, Cr and Co and combinations thereof and the balance copper and inevitable impurities;
- hot reducing the alloy at from about 750°C to about 1,000°C;
- providing one or more cycles comprising cold reducing the alloy to a reduction in area of from about 50% to about 99% and then age annealing at an annealing temperature of from about 400°C to about 650°C for from about 15 secs. to about 10 hours;
- cold reducing the alloy from about 40% to about 80% reduction in area;
- age hardening the alloy by annealing at from about 400°C to about 650°C for from about 1 to about 10 hours; and
- final reducing the alloy from about a 10% to about a 50% reduction in area to finished gauge.
12. **(Withdrawn)** The process of claim 11 wherein following said final cold rolling step, said alloy is annealed at a temperature of from about 150°C to about 600°C for from about 15 seconds to about 10 hours.
13. **(Withdrawn)** The process of claim 12 wherein said annealing steps have times

and temperatures effective for said alloy to have a yield strength of at least 105 ksi and an electrical conductivity of at least 50% at finish gauge.

- 14. (Withdrawn)** A process for making a copper base alloy having high yield strength and moderate strength, electrical conductivity comprising:
- casting a copper base alloy that consists essentially, by weight, from 0.35% to 10% titanium, from 0.001% to 6% of X, where X is selected from Ni, Fe, Sn, P, Al, Zn, Si, Pb, Be, Mn, Mg, Bi, S, Te, Se, Ag, As, Sb, Zr, B, Cr and Co and combinations thereof and the balance copper and inevitable impurities;
  - hot reducing the alloy at from about 750°C to about 1,000°C;
  - cold reducing the alloy to a reduction in area of from about 50% to about 99%;
  - solution annealing the alloy at a temperature of from about 950°C to about 1,000°C for from about 15 seconds to about one hour, followed by a rapid cool to ambient;
  - cold reducing the alloy from about 40% to about a 60% reduction in area;
  - age annealing the alloy at a temperature of about 400°C to about 650°C for from about 1 to about 10 hours;
  - cold reducing the alloy from about a 40% to about a 60% reduction in area;
  - age annealing the alloy a second time at a lower temperature than the first aging anneal of from about 375°C to about 550°C for from about 1 to about 3 hours;
  - and
  - cold reducing at least about 30% reduction in area to a finished gauge.
- 15. (Withdrawn)** The process of claim 14 wherein following said final cold rolling step, said alloy is annealed at a temperature of from about 150°C to about 600°C for from about 15 seconds to about 10 hours.
- 16. (Withdrawn)** The process of claim 15 wherein said first, second and third annealing steps have times and temperatures effective for said alloy to have a

yield strength of at least 105 ksi and an electrical conductivity of at least 50% IACS at finish gauge.

17. **(Withdrawn)** A process for making a copper base alloy having high yield strength and moderate strength, electrical conductivity comprising:
- casting a copper base alloy that consists essentially, by weight, from 0.35% to 10% titanium, from 0.001% to 6% of X, where X is selected from Ni, Fe, Sn, P, Al, Zn, Si, Pb, Be, Mn, Mg, Bi, S, Te, Se, Ag, As, Sb, Zr, B, Cr and Co and combinations thereof and the balance copper and inevitable impurities;
  - hot rolling the alloy at from about 750°C to about 1,000°C.;
  - cold rolling the alloy to a reduction in area of from about 50% to about 99%;
  - solution annealing the alloy at a temperature of from about 950°C to about 1,000°C for from about 10 seconds to about one hour, followed by a rapid cool to ambient;
  - cold rolling the alloy from about a 40% to about a 60% reduction in area;
  - age annealing the alloy at a temperature of about 500°C to about 575°C for from about 15 seconds to about 10 hours or at a temperature of about 425 to about 475°C for about 2.5 to about 3.5 hours;
  - cold rolling the alloy from about a 40% to about a 60% reduction in area;
  - age annealing the alloy a second time at a temperature of from about 500° C to about 550°C for from about 1 to about 4 hours; and
  - final rolling at least about 30% reduction in area to a finished gauge.
18. **(Withdrawn)** The process of claim 17 wherein following said final cold rolling step, said alloy is annealed at a temperature of from about 150°C to about 600°C for from about 15 seconds to about 10 hours.

- 19. (Withdrawn)** The process of claim 18 wherein said annealing steps have times and temperatures effective for said alloy to have a yield strength of at least 105 ksi and an electrical conductivity of at least 50% at finish gauge.


***EVIDENCE APPENDIX – UNDER 37 C.F.R. § 41.37(c)(1)(ix)***

- A copy of the Final Office Action mailed February 23, 2007 placing the present application under final rejection is provided

***RELATED PROCEEDINGS APPENDIX - UNDER 37 C.F.R. § 41.37(c)(1)(x)***

NONE.



 <b>Office Action Summary</b>	Application No.	Applicant(s)	
	10/657,005	CARON ET AL.	
	Examiner	Art Unit	
	Sikyin Ip	1742	

-- THE MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☒ Responsive to communication(s) filed on 07 December 2006.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 1-19 is/are pending in the application.
- 4a) Of the above claim(s) 8-19 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-7 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 26 January 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |   |   |
|---|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)                        | 4) <input type="checkbox"/> Interview Summary (PTO-413)                     |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)    | Paper No(s)/Mail Date. _____  |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date _____   | 6) <input type="checkbox"/> Other: _____                                    |

## DETAILED ACTION

### Claim Rejections - 35 USC § 103

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(f) or (g) prior art under 35 U.S.C. 103(a).

Claims 1-7 are rejected under 35 U.S.C. § 103 as being unpatentable over JP 2001181759 (PTO-1449).

JP 2001181759 discloses Cu based alloy composition (claim 2) and tensile and electrical conductivity (Table 2). JP 2001181759 does not disclose tensile property as yield strength as recited in claim 1. But, tensile strength and yield strength for Cu electrical alloys are about the same because of the spring property. As stated in *In re Peterson*, 315 F.3d 1325, 1329-30, 65 USPQ2d 1379, 1382 (Fed. Cir. 2003), that “A prima facie case of obviousness typically exists when the ranges of a claimed composition overlap the ranges disclosed in the prior art”. Therefore, it would have been obvious to one of ordinary skill in the art to select any portion of range, including

the claimed range, from the broader range disclosed in a prior art reference because the prior art reference finds that the prior art composition in the entire disclosed range has a suitable utility. Also see MPEP § 2131.03 and § 2123.

Claims 5-7 are rejected under 35 U.S.C. § 103 as being unpatentable over JP 09263864 or JP 2002038246 (both are in PTO-1449).

Cited references disclose Cu based alloy composition in their abstracts. The Cu based alloy compositions of cited references overlap the claimed Cu based compositions. As stated in *In re Peterson*, 315 F.3d 1325, 1329-30, 65 USPQ2d 1379, 1382 (Fed. Cir. 2003), that "A prima facie case of obviousness typically exists when the ranges of a claimed composition overlap the ranges disclosed in the prior art". Therefore, it would have been obvious to one of ordinary skill in the art to select any portion of range, including the claimed range, from the broader range disclosed in a prior art reference because the prior art reference finds that the prior art composition in the entire disclosed range has a suitable utility. Also see MPEP § 2131.03 and § 2123.

### ***Response to Arguments***

Applicant's arguments filed December 7, 2006 have been fully considered but they are not persuasive.

~~Applicant respectfully requests reconsideration of the rejection of claims 1-7 as~~

Applicants argue that " anticipated by JP2001181759.

"

which is found inconsistent with the record. None of the instant claims is rejected under

35 U.S.C. §102 or "anticipated" (see above rejections and prior office action mailed July 7, 2006).

Applicants' argument in pages 9/10 of instant remarks with respect to JP 2001181759 is noted. But, JP 2001181759 teaches Ti as an additive element to the copper based alloy (see claim 2). JP 2001181759 discloses copper based alloy can achieve 725 N/mm<sup>2</sup> tensile strength which is about 105.34 ksi.

JP09263864 fails to disclose or suggest a copper-titanium alloy of the claimed

Applicants argue that " composition with the claimed electrical and physical properties. ~~While JP09263864~~ " But, instant claims 5-7 do not recited any range of electrical and/or tensile properties.

## Conclusion

**THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Applicant is reminded that when amendment and/or revision is required, applicant should therefore specifically point out the support for any amendments made to the disclosure. See 37 C.F.R. § 1.121; 37 C.F.R. Part §41.37 (c)(1)(v); MPEP §714.02; and MPEP §2411.01(B).

Art Unit: 1742

**Examiner Correspondence**

Any inquiry concerning this communication or earlier communications from the examiner should be directed to S. Ip whose telephone number is (571) 272-1241. The examiner can normally be reached on Monday to Friday from 5:30 A.M. to 2:00 P.M.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Dr. Roy V. King, can be reached on (571)-272-1244.

The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

  
SIKYIN IP  
PRIMARY EXAMINER  
ART UNIT 1742

S. Ip  
February 16, 2007